

The mechanisms of age-related difference of annual changes in ankle-brachial pressure index

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In addition to both pulse wave velocity (PWV; a marker of arterial stiffness) and augmentation index (AI; a marker of central hemodynamics), not only the decrease of ankle-brachial pressure index (ABI) but also its increase predict the future cardiovascular events. While arterial stiffness and central hemodynamics have been proposed to affect the increase in ABI logically, their effects on increase in ABI have not been fully clarified. The present cross-sectional and longitudinal studies were conducted to examine the associations of arterial stiffness and central hemodynamics with increase in ABI and also examine the age-related difference of those associations. In 4016 men (42±9 years old), ABI, brachial-ankle PWV (baPWV) and radial AI (rAI) were measured annually for 9 years' observation period. In the cross-sectional analyses adjusted with age, heart rate and mean blood pressure, both baPWV and rAI were associated with ABI in men aged <50,

but not in men aged >50. As shown in Figure, ABI was annually increased in subjects aged <50 (n=2870), but not in those aged >50 (n=1146) during the follow-up period. The mixed model linear regression analysis (MMA) conducted in 9 years' annual repeated measurement data demonstrated that increased baPWV (estimate = 0.017, p<0.05) and increased rAI (estimate 0.254, p<0.05) were significant determinant of annual increase of ABI (p<0.01) in men aged <50, but not in men aged >50. In conclusion, the arterial stiffness and central hemodynamics may individually affect the increase in ABI in men aged <50, but not in men >50. Thus, further studies are needed to clarify whether ABI, arterial stiffness, and central hemodynamics individually predicts future cardiovascular events, and their age-related difference of their predictabilities.

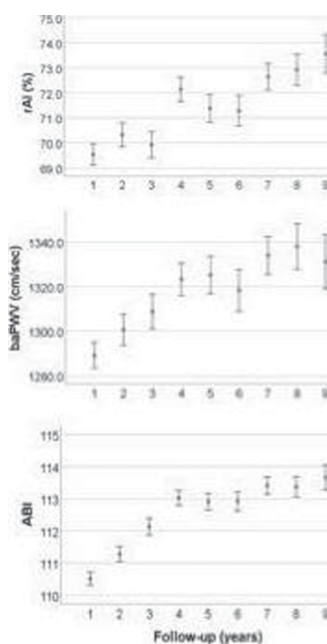


figure1